P&SN Police and Security News

Serving Law Enforcement & Homeland Security

JULY/AUGUST 2024
VOLUME 40 ISSUE 4

How to Reduce Your "WOBBLE ZONE"

Improving Analysis of "TRACE DNA" EVIDENCE

Recent Developments in Ballistic Armor Technology and Design

RATIONALE AND JUSTIFICATION FOR GROUNDING

The Threat of AI-DRIVEN CYBERCRIME

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ON THE COVER

Over the past year, advancements in the ballistic protection field have led to significant improvements, enhancements and design upgrades, thereby increasing the effectiveness of ballistic armor.

Pictured on the cover is a King County Sheriff's tactical officer, on scene in downtown Seattle after a man was shot robbing a convenience store.

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...AND NOTHING BUT THE TRUTH

Guardians of the Deep Blue

RAMESH NYBERG

There is a place where crime goes largely unnoticed. What's more, it's a huge place – you can't go in any direction and not find it. Rampant criminal acts, such as fraud, widespread theft, false imprisonment, rape, and even murder occur with impunity, because these serious violations are both unreported and hidden from public view. Astonishingly, this "place" is the largest geographic entity on the planet: our oceans.

I've always had an interest and a love for the ocean and now they are intersecting with my dedication to law enforcement ideals, so heave to, maties, we're going to take a short trip (and, no, we won't end up like Gilligan). From a policing standpoint, this is fascinating – though troubling – stuff.

Most countries have a 13 mile jurisdictional limit before the sea morphs into a legally nebulous status we call "international waters." Once outside this 13 mile boundary, ships – and those who are employed on them – are governed by their country's flag of registry. Commercial fishing is perhaps the industry which is most rife with criminal activity. To begin with, there are fishing "zones" designated by a given country and rogue fishing vessels are known to poach these waters illegally for prized species such as the Patagonian toothfish (better known at your favorite restaurant as Chilean sea bass). You may have your own vision of what a "fishing ship" might be, but imagine a vessel which tows behind it a net which is a *mile wide*. When they crank these gigantic nets in, their intended catch is mixed in with many other species and dumped into a huge sorting area below deck. By the time the unwanted catch is separated and tossed overboard, they are usually dead. You have to have permission to fish in a country's waters, but some boat captains regularly violate them because it's relatively easy. Who has enough police boats to watch their 13 mile jurisdictional limits? And, if a boat is actually spotted fishing illegally, who will "chase" it and for how long?

Peter Hammarstadt might. He's the founder of Sea Shepherd, a not for profit organization which is dedicated to identifying and chasing down seafaring lawbreakers for a variety of criminal violations. His three ship vigilante navy has received funding from wealthy donors and even environmental organizations, giving them the manpower, fuel and equipment to detect and even pursue the worst violators. It's a grueling dangerous job. The flagship, *Bob Barker*, once followed a notorious violator, the *Thunder*, a Lagos-flagged trawler, for *two months* through some of the planet's most treacherous waters before the offending captain had to put into port for fuel. The problem (a common one) was that the port country had no jurisdiction to enforce those particular violations, since they didn't occur in their waters, so they did nothing. Still, Sea Shepherd's crew remains undaunted, finding every way they can to investigate criminal activity on the high seas which is often in the form of human abuse.

Those who find work in maritime industries are often on society's fringe; they can be destitute and unable to find other work or they are evading legal troubles on land. Most are desperate for work, so much so that they may endure workdays lasting up to 20 hours along with insanely low pay. Predatory shipowners and captains take full advantage of their

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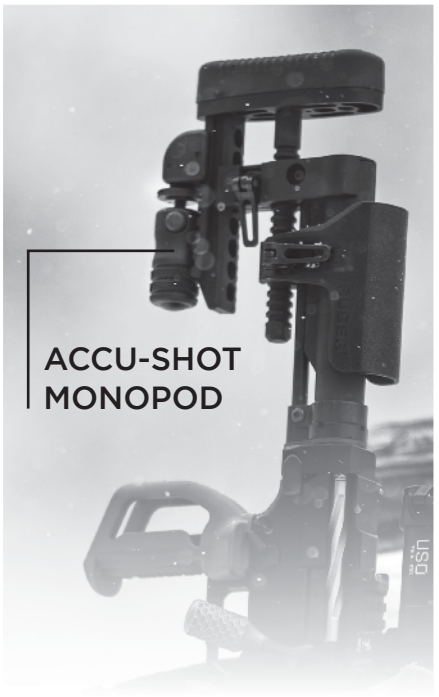

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...AND NOTHING BUT THE TRUTH

Continued from page 6

situation, sometimes withholding pay for months after a trip – and a fishing "trip" can continue for weeks or longer. The living quarters on some of these ships are cramped, unsanitary flotillas of disease. One Greek ship was about to be "caught" so the captain scuttled the vessel, intentionally sinking it to destroy evidence. He didn't notify the rest of the crew as he and his first mate escaped on liferafts while the rest of the 22 man crew was left on a sinking death trap. Many of them died. Men who sign up for work on these vessels are largely uneducated, unskilled and financially destitute. They sign unconscionable contracts and have no money to pay lawyers to represent them in civil actions. Instead, they just accept the abusive lifestyle and even go back to it for lack of a better option.

In going after the worst violators, Hammarstadt and the other members of Sea Shepherd's courageous homegrown navy aren't completely alone. Interpol has been made aware of fishing violations for decades and, while they can't dispatch ships to find and catch them, they do have a system for identifying the most serious offenders. Interpol's strategy involves color coded categories, the "purple notice" list reserved for the most egregious violators. This list is provided to every country's law enforcement resources and to recognized private forces like Sea Shepherd. Oceangoing criminal behavior is no laughing matter. Besides the harsh and illegal treatment of maritime workers, illegal seafood catches make up about 20% of what ends up in the world's seafood markets. Local wholesalers in many countries ask few questions if they can pay a discounted rate for their merchandise and so the seafood industry is flooded with goods which have no identifying marks or serial numbers to tell you how they were obtained or by whom. It's hard to believe, but the sustainability of the ocean is in peril because of these unlawful activities. We all know that, as local law enforcement, our hands our pretty much tied. The Coast Guard might snag illegal fishing vessels from time to time, but that's certainly not part of their mission, with tasks like the trafficking of drugs and humans to attend to. Finding illegal fishing boats is probably way down on their list. Now imagine most other countries whose maritime law enforcement capabilities are way less than ours and you realize the free reign which the vast ocean provides for unlawful acts of all kinds.

There are so many layers to this problem. The results of unchecked maritime activity involves not just the taking of sea life, but human trafficking, human rights violations and working conditions which sometimes come close to outright slavery. There is even a doctor in Mexico who takes women out to international waters to perform abortions, away from the clutches of Mexican legal jurisdiction. In his remarkable book, *The Outlaw Ocean*, author Ian Urbina recounts some of these harrowing stories in great detail. Urbina did more than just research and interviews; he accompanied Hammarstadt aboard the *Bob Barker* (read the book to see why they named it that), enduring storms, sleepless nights and exhausting investigations, all thousands of miles from land.

As someone who grew up on the water, I hope the future of international law enforcement involves greater application of resources for the protection of the ocean, of legitimate maritime industries, and the people who work in them. **P&SN**

Ramesh Nyberg retired from law enforcement in November 2006 after 27 years of police work. He lives in Miami and teaches criminal justice at a local high school. He also teaches regional law enforcement courses through Training Force, USA. He enjoys getting feedback from readers and can be reached at ramesh.nyberg@gmail.com. Also, Ram has written a new book, Badge, Tie and Gun: Life and Death Journeys of a Miami Detective*, which is available on Amazon in both Kindle eBook and paperback. You can find it by visiting* ***amazon.com/dp/B0CTQQKQTV***

NRA COMMUNITY SHIELD

The National Rifle Association recognizes the need to protect America's places of worship, just like the nations' schools. Like schools, our houses of worship are being targeted by evil people, whose goal is to kill and spread fear. When people gather in groups for the purpose of religious worship, they can quickly become easy victims, as we have seen in increasing numbers.

Most leaders in houses of worship do not know where to turn, in an attempt to make their gatherings safer from unauthorized persons or potential violence.

Small, simple changes can make a big difference in protecting your attendees, if you know what to look for.

The NRA has taken its' National School Shield assessor training program and built a sister program named Community Shield.

Community Shield offers training to help houses of worship conduct vulnerability assessments to better protect their attendees from violence. We believe that if the target location has had a vulnerability assessment you can slow or prevent an attack on your attendees, as well as, having a plan to deal with an act of violence, should something occur.

Our Community Shield presentation is not meant to make you a security expert, it was developed for the average, non-law enforcement person, although law enforcement is welcome to attend.

Some of the topics we will cover:

- What is a vulnerability?
- How to mitigate a vulnerability.
- A procedure or plan if an intrusion occurs.
- Should attendees be armed, if so, who?

And more.

For more information contact us at **communityshield@nrahq.org**

LE.NRA.org

FOCUS ON TECHNOLOGY

New Scabbard Pack System

The new **Scabbard Pack System** from AARDVARK Tactical is a MOLLE-mounted backpack featuring a removable KYDEX® scabbard for carrying mechanical entry tools, breaching shotguns and other hard to carry items. The KYDEX channel inside the pack allows tools to be deployed seamlessly without compromising pack use. This scabbard can be removed for traditional use and reinstalled in minutes. The pack's ultraslim design includes a large main compartment for additional tools or a 3L hydration system; two outer pockets with zippered compartments and elastic carriers for items like 40mm rounds and medical supplies; and side configurations for a MOLLE pouch and elastic retention system to hold small pole cameras, stick charges and similar tools. The design ensures tools are carried close to the body, preventing bouncing while running and allowing immediate access.

aardvarktactical.com

New MIL-SPEC Tactical Tan 499 Holster and Accessory Line from Alien Gear

Tedder Industries has introduced its new **MIL-SPEC IR** (infrared) **Neutral Tan 499 holster** and **accessory line**, designed to offer essential infrared camouflage for concealment and operational security.

Alien Gear Holsters' Rapid Force **MIL-SPEC Tactical Tan 499 holster** and **accessory line** is significant due to its effectiveness in evading detection by night vision devices, targeting systems and other surveillance tools.

Key features of the **Tan 499** include its military grade camouflage which blends seamlessly into various environments; IR neutral technology which provides effective infrared camouflage, thus making it beneficial for lowlight or nighttime conditions; and its durability which comes from a proprietary polymer blend which meets the rigorous demands of law enforcement professionals.

aliengearholsters.com

SWAT/Tactical Equipment

BlueRidge Armor

BlueRidge Armor has launched the **VENGEANCE™ X8 platform**, a state-of-the-art hard armor ballistic shield featuring the patented VENGEANCE Viewport and Ballistic Bezel System. Available in SLR and XLR configurations, it includes a compact flat panel with an ambidextrous weapon mount, a carbon fiber wide-format straight bar handle, high-density impact-absorbing molded foam arm pad, and heavy-duty adjustable forearm strap.

Constructed from 100% high performance composite ballistic materials, the shield is coated in durable black polyurea (available in black or ranger green) and includes features like a custom ID placard, single point shield hook and sling with MOLLE attachment, and a carry bag. It meets NIJ 0108.01 Level III rating with special threat protection up to Level III+. Optional features include removing the viewport and placard. The X8 XLR with a carbon handle measures 18" x 30" and weighs 17 pounds or 18 pounds with a Top Mount Light, or 21 pounds with integrated Elzetta lighting. The shield offers protection against special threats including 7.62x51 M80 FMJ, 7.62x39 PS Ball with mild steel core, 5.56x45 M193 Ball, and 5.56x45 Federal Tactical Bonded rounds.

blueridgearmor.com

New INFORCE Weapon-mounted Lights

INFORCE has launched its latest iteration of weapon-mounted lights with the **WMLx™ White/IR Gen 3** which provides more than twice the beam intensity of its predecessor on two 123A batteries. The two hour battery life remains unchanged, ensuring extended use in the field.

With a beam intensity of 900 lumens and a range of 656 feet, the **WMLx White/IR Gen 3** offers excellent visibility within a comfortable engagement range. This feature, combined with its ergonomic nonslip button, contoured to the shape of the human thumb, ensures that users can activate and deactivate the light intuitively. Additionally, a flip safety prevents the device from being turned on until the user is ready.

The **WMLx White/IR Gen 3** is suitable for close quarter engagements when mounted to a shotgun or pistol-caliber carbine, as well as mid-range shooting when attached to a rifle. It's constructed of glass reinforced nylon which is impervious to dirt, sand and other solid debris. The model is also waterproof up to 66 feet, ensuring reliable performance in any conditions.

inforcelights.com

New Multifuel, Rail-mounted Tactical Light

Streamlight® Inc. has introduced the **TLR-7® HL-X USB**, a 1,000 lumen, rail-mounted light with a beam reaching up to 22,000 candela, doubling the distance of previous TLR-7 models. It offers a choice between an SL-B9® USB-C rechargeable battery pack or a three volt CR123A lithium battery. The light features customizable rear paddle switches, a one-handed snap-on interface and a "safe off" feature to prevent accidental activation. Made from 6000 Series machined aircraft aluminum, it weighs 2.88 ounces with the SL-B9 battery and 2.80 ounces with a disposable battery and measures 2.90 inches in length. It comes in black or flat dark earth and includes a high switch, a low switch, an SL-B9 battery pack, and a USB-C cable.

streamlight.com

New Specter Gen II Wireless LED Shield Light

United Shield International has introduced the **Specter Gen II Wireless LED Shield Light**, featuring significant enhancements over the original model. Weighing just 1.46 pounds and reduced to a third of its original size, this compact design attaches to shields with a base plate for toolless removal, making it versatile for countless uses. Compatible with any shield, the light module delivers 5000 lumens with constant on and strobe settings; includes magnetic charging; and has a green navigation light for stealth in nighttime operations.

Upgrades include a wireless key fob and pressure pad with an aluminum battery box for a single CR123 battery, a heavy-duty key fob, and a pressure pad stabilization unit. It offers three hours of steady burn at 5000 lumens, followed by 2.5 hours at 50% output.

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Ballistic Armor Update: 2024

P&SN STAFF

In the field of ballistic protection, incremental improvements occur regularly. Over the past year, the ballistic protection community has provided improvements, enhancements and design upgrades which have advanced the effectiveness of ballistic armor. To follow are some of these new upgrades within the ballistic protection industry.

AARDVARK Tactical

AARDVARK Tactical's PROJECT7 recently announced a number of changes to their product offerings for the fall of 2024 including redesigns to their major platforms and a new scalable K9 armor system.

PROJECT7 has updated and redesigned all their entry vest and plate rack offerings to incorporate a host of new features including Front Loadout Configurations and the Adaptive Pouch Cummerbund System (APS). All P7 platforms are now available with two new optional loadout systems based on the patented PROJECT7 FLEX system. Users can choose from a fixed MOLLE system; a removable FLEX panel system with swappable loadout panels; or a FLEXAROO system which incorporates a configurable kangaroo pouch, removable FLEX loadout pan-

All PROJECT7 platforms now offer two additional optional loadout systems utilizing the patented PROJECT7 FLEX technology.

els and a concealed tourniquet pouch.

The APS, now standard with all PROJECT7 armor platforms, allows users to carry everything from a cell phone to a TASER® to a full-size radio inside their cummerbund. This design preserves critical MOLLE surface area and integrates essential gear into the armor platform to streamline movement and increase comfort. APS cummerbunds also accommodate removable VELCRO® retention straps and FLEXAROO inserts for added security.

When LASD-SEB lost their K9, Jack, to a gunshot wound in the neck and upper chest, it inspired PROJECT7 to develop a new K9 armor platform with enhanced coverage and scalable ballistic protection. While scalability is common in human armor, it was previously unavailable for K9s. PROJECT7 partnered with prominent K9 handlers and conducted extensive field testing to ensure the best blend of comfort and protection. Collaborating with Safariland's ballistics team, they created a custom ballistic package which offers Level II protection and resistance to stab, slash and impalement threats. The result is a revolutionary three-piece armor system providing greater coverage, flexibility, comfort, and adjustability, including a unique ballistic yoke and custom sizing for previously unprotected vital areas. (**project7armor.com**)

Adept Armor

The NIJ's new body armor specification 0101.07 is now live, but a draft form was released to the body armor industry for comment in 2019. The version implemented differs very little from that 2019 draft. With years to prepare for these updated standards, manufacturers have already developed plates which comply with the new specification. Among these, the Thunder plate from Adept Armor stands out by meeting the RF2 ("III+") level, effectively stopping 7.62x51mm M80 Ball, 5.56x45mm M193 and M855, and mild steel core 7.62x39mm rounds. It achieves this with an unrivaled light weight – just 3.45 pounds per 10" x 12" plate – while also featuring edge to edge ceramic coverage and a multi-curve geometry for comfort. The RF2 level, addressed by the Thunder plate, looks to be particularly relevant for law enforcement personnel, as it covers all of the most commonly encountered rifle threats within the United States. (**ade.pt)**

Adept Armor's Thunder plate is exceptionally lightweight at only 3.45 pounds per 10" x 12" plate, with full ceramic coverage from edge to edge.

Continued from page 13

The new VENGEANCE™ X8 ballistic shield platform from BlueRidge is available in SLR (Standard Lite Rifle) and XLR (Xtra Lite Rifle) configurations.

BlueRidge Armor

BlueRidge Armor has just introduced the VENGEANCE™ X8 platform, a hard armor ballistic shield incorporating the latest advancements in armor technology. The shield boasts a range of standard features, including the patented VENGEANCE Viewport and Ballistic Bezel System, available in SLR (Standard Lite Rifle) and XLR (Xtra Lite Rifle) configurations. It also includes a compact flat panel with an ambidextrous weapon mount, a carbon fiber wide format straight bar handle, a high-density impact absorbing molded foam arm pad, and a heavy-duty adjustable forearm strap.

The shield is constructed from 100% high performance composite ballistic materials and is coated with a durable black polyurea finish available in black or ranger green. Additional features include a custom ID placard, a single point shield hook and sling with MOLLE attachment, and a carry bag. The shield is NIJ 0108.01 rated Level III and offers special threat protection up to Level III+. Optional features include the deletion of the viewport and placard, as well as auxiliary lighting.

The X8 XLR with a carbon handle measures 18" x 30" and weighs 17 pounds, while the X8 XLR with a carbon handle and Top Mount Light weighs 18 pounds, and the X8 XLR with an integrated Elzetta weighs 21 pounds. The shield body provides protection against special threats such as the 7.62x51, 149-gr. M80 FMJ; the 7.62x39, 123-gr. PS Ball with a mild steel core; the 5.56x45, 55-gr. M193 Ball; and the 5.56x45, 62-gr. Federal Tactical Bonded rounds. (**blueridgearmor.com**)

BulletSafe

BulletSafe's new VP4 Vest with Integrated RLA Armor is a unique combination of cutting-edge design and advanced Level IIIA ballistic protection. This kit merges the comfort and mobility of the VP4 Vest with the powerful defense of RLA Armor for a wide range

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The VP4 Vest ensures optimal freedom of movement with its superior cut and low-profile VELCRO fastening system. Crafted from high performance materials, this integrated product withstands active use and offers plate pocket access on both front and rear, compatible with RLA Armor and BulletSafe Level IV plates.

The RLA Armor delivers certified protection against pistol calibers up to .44 Magnum, featuring a waterproof soft shell for comfort in various conditions. Precision crafted in the USA, the armor's strategic design enhances shoulder movement for maximum mobility. (**bulletsafe.com**)

Hardwire® LLC

Hardwire recently announced its contract award from the Federal Bureau of Investigation (FBI) for the provision of its new Triclops ballistic shield. Hardwire, in partnership with Bethel Industries, swept all four contracts awarded by the FBI for the ballistic shields.

The shield technology represents a groundbreaking leap forward in law enforcement technology. Spearheading this technological advancement is the use of Hardwire's patented Turning Block, an armor method which effectively flips the bullet using its own rotational energy and causing it to land sideways in the back of the shield. This innovation results in a shield with never before seen multihit protection against clips of armor piercing automatic gunfire with rounds stopping in the shield as close as a half inch apart.

Hardwire's Triclops ballistic shield utilizes an armor method which effectively flips the bullet using its own rotational energy and causing it to land sideways in the back of the shield.

The new shield is designed with several user-friendly features. It is lightweight, allowing for easy maneuverability, and can be held with the left hand, right hand, or both hands, providing flexibility in usage. It includes a central LED light which offers convenient illumination, controlled by a switch on the handle and powered by an attached battery pack. The weight distribution system ensures ease of long-term wear and use, and a VELCRO loop on the rear of the shield enables the attachment of accessories.

Additionally, via these contracts, Hardwire introduced the Triclops, a periscope system which offers visual acuity while providing full protection for the officer's head. The Triclops is much lighter

Continued from page 15

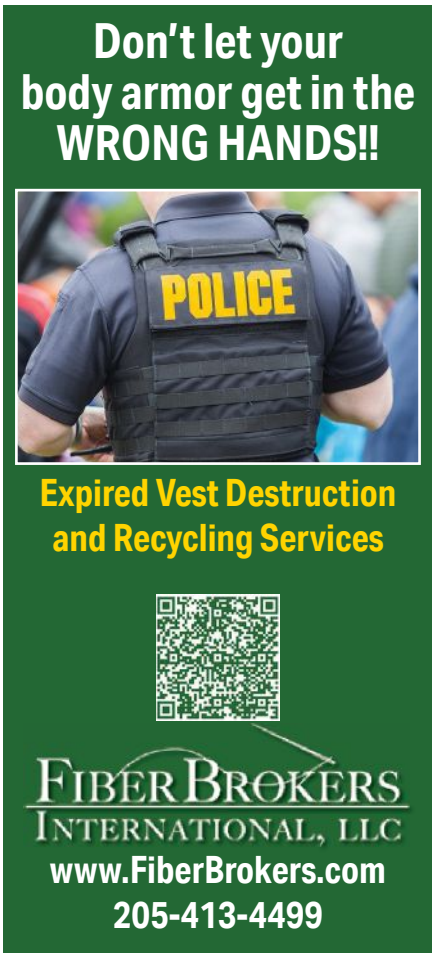
than a ballistic window and allows users to peek around corners or over fences without exposing themselves to gunfire. It enables precise aiming of weapons through an optically perfect reflection of the officer's sights, regardless of type, and works seamlessly with night vision goggles. The Triclops accommodates right- or left-handed users and is electronic-free, ensuring 100% reliability without the need for batteries, boot-up or latency. (**hardwirellc.com**)

Safariland®

Safariland recently announced the release of the PROTECH® Assault II and III Lightweight Shields. Integrating Level III rated rifle protection in a lightweight profile, these shields feature a triangular viewport which allows for increased vertical visibility.

The Assault II LW, weighing just 14.8 pounds, is designed to meet the needs of both tactical teams and patrol officers. Its Level III rated rifle protection offers reliable defense against various threats, including the 7.62 x 51mm, 147-gr. M80 FMJ (NATO), as well as

The APEX® Concealable Vest features a zip-up front for easy on and off, eliminating the need for VELCRO® and elastic straps.



being NIJ 0108.01 compliant and capable of stopping impacts of the 5.56 x 45mm M193 and 7.62 x 39mm MSC special threat rounds.

The Assault III LW, weighing only 20.4 pounds, is capable of stopping the 7.62 x 51mm, and 147-gr. M80 FMJ (NATO). Additionally, it is NIJ 0108.01 compliant and capable of stopping impacts of the 5.56 x 45mm M193 and 7.62 x 39mm MSC special threat rounds.

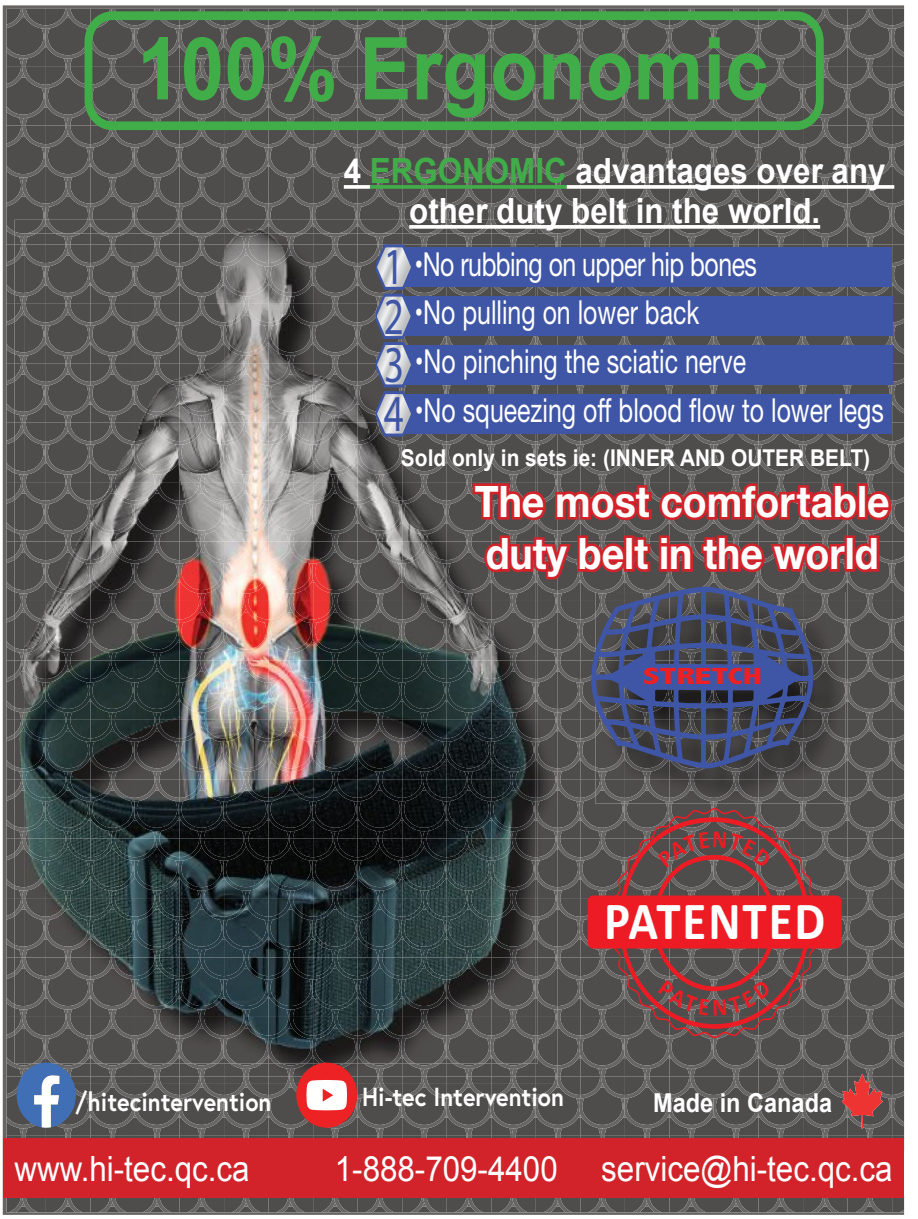
Also new from Safariland is their APEX® Concealable Body Armor Vest. Unlike traditional vests, the APEX features a zip-up front for easy on and off and this design eliminates the need for VELCRO and elastic straps. The four-piece carrier design integrates two side panels with their front and rear counterparts which ensures unparalleled articulation, allowing the armor to protect the body when twisting or turning. The floating front and rear panels overlap the side panels providing continuous protection no matter how one moves. (**safariland.com**)

United Shield International

United Shield International has recently introduced the Specter Gen II wireless LED shield light, a significant upgrade from their original 7000 lumen model. Weighing just 1.46 pounds and scaled down to a third of its predecessor's size, the Specter Gen II offers versatility – attaching to shields via a base plate for easy module removal, compatible with any shield type.

USI's new Specter Gen II wireless LED shield light delivers 5000 lumens for three hours at full brightness.

Delivering 5000 lumens with constant and strobe settings, magnetic charging and a green navigation light for nighttime stealth operations, the Specter Gen II meets diverse operational needs. Upgrades to the wireless key fob and pressure pad include a durable aluminum battery box, heavy-duty components and a stabilization unit for the shield handle. With a three hour burn at full brightness followed by reduced output, the Specter Gen II ensures reliability during extended operations. (**us.unitedshield.com**) P&SN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PRODUCT HIGHLIGHT

Uniforms, Badges and Apparel

BLACKINTON

FlexBadge, by Blackinton, is the original 3D flexible metallic alternative to the traditional law enforcement patch and direct embroidery. **FlexBadge** is the ideal accessory for a tactical vest as it is light weight, available with a VELCRO® backing, and it conveys authority. In comparison to embroidery, **FlexBadge** has a very detailed 3-D design and it lies flat without buckling, so **FlexBadge** helps departments maintain a professional public image. Since **FlexBadge** is made in the US, there are NO minimums on Standard **FlexBadge** orders. Similar to Blackinton's metal badges, **FlexBadge** can be personalized with the lettering, backing, seal, and finish of the department's choice. Finish choices range from highly polished options to more subdued options. **FlexBadge** also can be easily adopted by both small and large departments, since there are no minimums.

blackinton.com

WILEY X

Wiley X recently released two new models of sunglasses – the **Founder** and the **Recon**. Both models boast shatterproof Selenite™ 6-base lenses for superior protection and durability, while WX CAPTIVATE™ lens technology, available in polarized and nonpolarized options, enhances visual experience with superior clarity, enhanced contrast and vivid colors. Additionally, they're available with prescription lenses using the brand's proprietary Digiforce2™ technology.

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wileyx.com

MAXTACS®

Maxtacs' Premier Combat Shirts offer both functionality and a comfortable fit. Featuring mesh ventilated sides to ensure airflow and keep wearers cool during field operations, these shirts come with removable elbow pads and four zippered compartments for quick access storage. Manufactured from a variety of ripstop poly/cotton/nylon/spandex materials, they come in a choice of six color patterns.

Maxtacs Combat Pants blend comfort, durability and functionality seamlessly. Featuring removable knee pads, inner thigh ventilation and strategic flex zones including under the belt line, they offer optimal mobility and breathability. With multiple zippered compartments and ankle pockets, you'll have quick, convenient access to your gear. Manufactured from a variety of ripstop materials, they come in a choice of seven patterns.

maxtacs.com

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Point Blank Duty Gear provides top-tier products which provide an innovative new approach to a complete duty gear system like no other. Some of their featured products include the Patrol Belt System, a versatile belt system designed for carrying essential gear securely; the Gun Belt System, a sturdy gun belt which provides support and quick access to your firearm; the Double Pistol Mag Pouch; and the Double Pistol Mag Pouch with Tank Track™, an upgraded version of the mag pouch with added durability and functionality. The entire **Point Blank Duty Gear** line can viewed by downloading the duty gear catalog.

pointblankenterprises.com/dutygear

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WaterShed's **StormForce® G1 Ackerman jumpsuit** provides the ultimate waterproof barrier. Made of 3-layer GORE-TEX® laminate, known as the leading waterproof and breathable fabric, it is fully tape sealed to guarantee that water does not penetrate. The **G1 Ackerman jumpsuit** features a fold down collar, nine pockets, side holster reinforcement, a center front zipper, and hook and loop sleeve cuff closures. Custom options and sizing are available to ensure the fit for both an individual and the entire department.

gowatershed.com

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The **StormForce® Charlie Bib Overalls** provide the ultimate waterproof barrier. Made of 3-layer GORE-TEX® laminate, they are also tape sealed to guarantee that water does not penetrate, thus keeping wearers warm, dry and focused on the task at hand. The **StormForce Charlie Bib Overalls** feature elastic suspenders with heavy-duty fasteners, a center front zipper, elastic on the back waist to gather loose material, and waterproof side leg zippers to increase the ease of pulling over duty gear. Snaps are included at the pant hem to lock down over boots for added protection from the elements. Custom options and sizing are available to ensure the fit for both an individual and the entire department.

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GROUNDING and Your Justification for It

Photo: Elvert Barnes

The grounding of an individual is an expanding area in civil litigation, expected to persist for many years. The potential complexities involved when law enforcement officers ground a subject often necessitate a careful balance of legal, tactical and medical factors.

JOHN G. PETERS, JR., PH.D.; DARRELL L. ROSS, PH.D.; AND MICHAEL BRAVE, ESQ.

A Fourth Amendment seizure occurs either (1) by a Law Enforcement Officer's (LEO's) application of physical force, however slight, with intent to restrain, or (2) submission to a LEO's "show of authority" to restrain the subject's liberty. (*California v. Hodari D.* [US, 1991], *Torres v. Madrid* [US, 2021]). Grounding a person is different than the outcome of being "grounded." Grounding, just like applications of restraints or spit masks, is a seizure (use of force) which must be objectively reasonably justified. A definition of "grounding" is displacing a person's balance by redirecting the person to the ground through physical (e.g., tripping, armbar takedown, tackling, throwing, etc.) or technological (e.g., firearm, Conducted Electrical Weapon [CEW]) means.

Before grounding an individual, LEOs must reasonably perceive a justified need to do so. Additionally, the method of grounding, considering the totality of circumstances as perceived by the LEO, must be objectively reasonable. LEOs sometimes focus on the outcome (grounded) and fail to recognize that they are required to justify the need for the grounding. The input (grounding) and the outcome (grounded) are *two separate processes, each of which requires legal justification.*

Grounding: Three Ds

Another popular definition of grounding includes the three Ds and is more specific than a generalized definition of the term. Grounding is the application of any physical action, force, technique, or intermediate weapon or device (including a canine) in response to a person's reasonably perceived immediate threat; active resistance; flight, attempt to flee, or evade seizure; and other *Graham/Kingsley* nonexclusive factors (*Graham v. Connor* [US, 1989], *Kingsley v. Hendrickson* [US, 2015], *Lombardo v. City of St. Louis, Missouri* [US, 2021]) *which **D**ecentralizes, **D**isplaces the balance* and/or ***D**irects* the person to the ground for purpose(s) of capture, control and/or facilitating restraint.

Grounding Rationales

There are many possible rationales for the grounding of individuals which include an LEO:

- Neutralizing a person perceived as an immediate threat;
- Defending against a combative and/or actively resistive person;
- Defending another person, such as a fellow LEO or civilian;
- Overcoming the person's active resistance from being seized, or fleeing;
- Attempting to accomplish other lawful objectives.

Grounding Considerations

As with any application of force, LEOs must consider the totality of circumstances as reasonably perceived when grounding the person. These include:

- the LEO's objective(s);
- the LEO's perception(s) of immediate threats posed by person;
- *Graham* (nonexclusive) factors (4th Amendment);
- *Kingsley* (nonexclusive) factors (14th Amendment);
- Additional totality of the circumstances' factors perceived;
- Associated risks to the LEO;
- Foreseeability of enhanced injuries from specific grounding: stationary grounding, grounding surface, grounding under momentum, grounding while operating a vehicle, holding something, etc.; and/or
- Additional factors based upon the LEO's reasonably perceived totality of the circumstances.

NRA SCHOOL SHIELD

Each year, our nation's schools are entrusted to provide a safe environment for approximately 55 million elementary and secondary school students in public, private, parochial and independent schools.

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We know school security is a complex issue with no simple, single solution. That's why NRA School Shield is committed to addressing the many facets of school security, including best practices in security infrastructure, technology, personnel, training, and policy. Through this multidimensional effort, we engage communities and empower leaders to help make our schools more secure.

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3. When was our emergency operations/ crisis management plan last reviewed?
4. What types of drills are conducted at our school and at what frequency?
5. Are all exterior doors of our school locked during instructional hours?
6. Are all visitors to our school required to check in with the main office?
7. Are students and staff trained on how to identify and report suspicious or concerning behaviors/comments?
8. Does our school have a behavioral threat assessment team?
9. If there is an emergency, how and when are parents/guardians notified?
10. Do we have designated security personnel assigned to our school? If so, are they armed/unarmed?

OUR KIDS ARE OUR RESPONSIBILITY. IT'S NOT JUST OUR DUTY TO PROTECT THEM, IT'S OUR RIGHT TO PROTECT THEM.

For more information and resources, visit:
www.nraschoolshield.org

Continued from page 20

Law enforcement officers sometimes concentrate on the outcome (grounding) without acknowledging the necessity of justifying the need for it. The action of grounding and the resulting state of being grounded are two distinct processes, each requiring its own legal justification. (Photo: Elvert Barnes)

Grounding Goals

Somewhat similar in nature to "Grounding Rationales" are the possible goals of grounding a person including:

- To reduce potential dangers associated with the individual (e.g., using personal weapons such as hands, feet, biting, acquiring or attempting to use a weapon);
- To gain a position of advantage over the individual who is threatening, actively resisting and/or struggling with LEOs;
- To reposition the individual for physical control advantage;
- To reposition the individual for a tactical advantage (i.e., easier to apply restraints);
- To reposition the individual onto a potentially less hazardous surface and more solid platform (i.e., ground);
- To reposition the individual to minimize flight risk; and
- To foreseeably increase the safety of the person and/or LEOs by minimizing physical hands-on engagement.

Grounding Legal Concerns

LEO *articulation* for the need to ground a person is a key component in explaining the LEO's perceived need for grounding. Examples include being able to explain the subject's reasonably perceived immediate threat level, the totality of the circumstances confronting the LEO and the rationale for the grounding. Trainers should consider incorporating these examples into their training programs to assist LEOs in articulating the reasons for grounding the person. Clearly established law provides guidance into what LEOs need to reasonably justify grounding the person.

In *Karels v. Storz* (8th Circuit, 2018), it was held that LEOs cannot forcefully take down an individual who is a nonviolent, nonthreatening misdemeanant who was not resisting or attempting to flee from LEOs. Specifically, the Court noted the LEO's alleged violent and uncontrolled takedown. The redirection of an individual to the ground is a use of force which involves the use of one or more force options. The force must be objectively reasonable.

In two Sixth Circuit cases, *Williams v. Ingham* (6th Circuit, 2021) and *Bozung v. Rawson* (6th Circuit, 2011), and a Fifth Circuit case, *Tucker v. City of Shreveport* (5th Circuit, 2021), LEOs were given qualified immunity because the grounded subjects had been actively resistive, given the totality of the circumstances. In *Mosier v. Evans and Crockett County* (6th Circuit, 2024), the court affirmed in part a granting of qualified immunity to a deputy who used a takedown technique on a person during the booking process. However, while the court affirmed the qualified immunity judgment of the district court, it reversed the dismissal of the plaintiff's negligence claim against the officer in his personal capacity and remanded the case for further proceedings. (Co-author Peters was an expert witness in the case.)

Grounding Can Be Objectively Unreasonable Force

Techniques for the grounding of individuals are varied and numerous (e.g., tripping, armbar takedown, wrist lock, hip throw, CEW, electronic glove, baton, firearm, etc.). Remember, the use of one or more forceful takedown techniques will be based in part on the LEOs training, experience and comfort in using them, as well as department policy and training. The LEOs grounding decision is separate from choosing and then applying one or more takedown force options. By now, the distinctions between grounding and being grounded, or remaining grounded should be clear.

While LEOs may have articulable justification for grounding a person, that does not automatically make their force choices justifiable. One can articulate an objectively reasonable basis for redirecting an individual to the ground, but then apply too much force, thereby making it objectively unreasonable based upon the totality of the circumstances as perceived by the LEO. Remember, many times grounding places the individual on his/her stomach, in a prone position, which may trigger the requirement to comply with specific state laws (e.g., Cal. Gov't Code § 7286.5), especially if the person suddenly dies (Non-Firearm Temporal Officer-Associated Death [NF TO-AD]).

Summary

An LEOs grounding of a person must be based upon more than, "I am arresting him and grounded him for increased control," or "I had to take him or her to the ground for my safety." LEOs are required to articulate why they reasonably perceived, based upon the totality of the circumstances, the justifications for redirecting the person to the ground. This is a separate and distinct decision from selecting the force options for redirecting an individual to the ground and then selecting restraint options after the person is grounded. Remember: The restraint methods and force used to apply

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The decision to use one or more forceful takedown techniques will depend partly on the LEO's training, experience and comfort in applying them, as well as on department policy and training.

restraints may be determined objectively reasonable by the court, but the LEO's grounding decision or actions may not have been justified. Given the increasingly more restrictive criminal laws controlling LEOs' actions being proposed or passed by some states which focus on LEOs use of grounding, positioning and potential negative restraint outcomes, coupled with the perceived decay of law enforcement by some media and the public, improved LEO decision-making is critical to tactical and courtroom survival. **P&SN**

John G. Peters, Jr., Ph.D., is a regular contributor to Police and Security News. *A former police administrator, deputy sheriff and patrol officer, he serves as President of the internationally recognized training firm, Institute for the Prevention of In-Custody Deaths, Inc. (IPICD). He also serves as Executive Director of the Americans for Effective Law Enforcement, Inc. (AELE). A judicially qualified expert witness, he has testified in international, federal and state courts.*

Darrell L. Ross, Ph.D., served as Chair of the Department of Sociology, Anthropology, and Criminal Justice at Valdosta (GA) State University and is the Director for the Center for Applied Social Sciences until his retirement this year. An experienced expert witness, Dr. Ross has testified in federal and state courts. He is an experienced correctional officer and is a renowned social science researcher and author of several books focusing on criminal justice topics. He regularly provides presentations on force and arrest/custodial deaths.

Michael Brave, M.S., J.D. (attorney, consultant, trainer, former sworn officer/chief), has been retained as an expert in 250+ cases; has been involved in reviewing 650+ law enforcement temporal deaths; and has presented on force options and other subjects 1000+ times in the US and abroad. He serves as ILEETA's (International Law Enforcement Educators' and Trainers' Association) Legal Advisor and as a Board Member.

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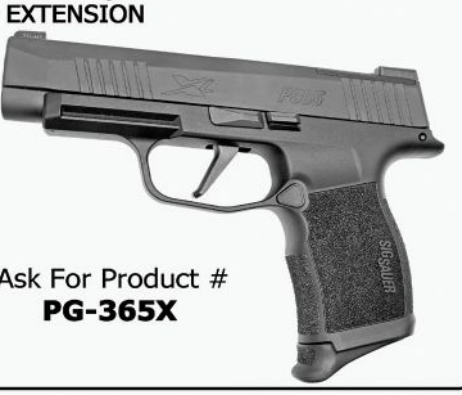

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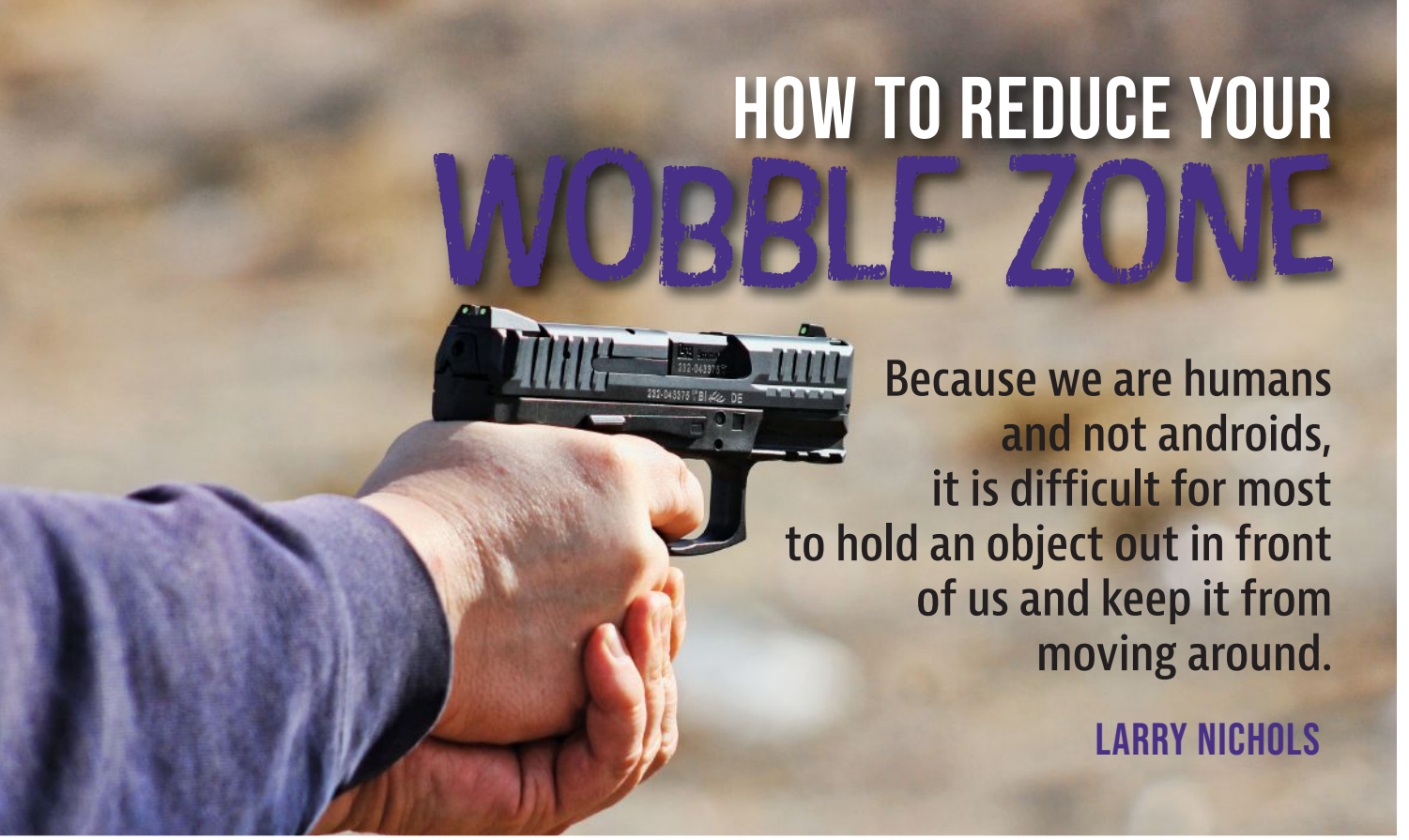


> Because we are humans and not androids, it is difficult for most to hold an object out in front of us and keep it from moving around.
>
> LARRY NICHOLS

When aiming at a target through a firearm's sighting system, the front sight post, red dot, or crosshairs in the scope tend to move unevenly across the aiming point on the target. This is referred to as "the natural wobble area" or "the wobble zone" and it cannot be completely stopped by the shooter. Inexperienced shooters find their natural wobble area sizable, moving from side to side in a figure eight across the aiming point on the target. With proper training and practice, the natural wobble area can be reduced in size, but it will never stop. The reason it cannot be stopped is because there are several natural biological functions occurring in our bodies which prevent us from holding a firearm still. Everyone from master marksmen to novice shooters experience this movement and each person must become comfortable with their natural wobble area for every shot they fire.

UNDERSTANDING THE PROBLEM

Two major obstacles which inexperienced shooters cope with are mastering proper sight alignment and proper trigger control. The novice shooter often stares at the target waiting for the sighting system to be on the aiming point and then jerk the trigger, missing the aiming point on the target. All hits on the target will be in the low left area of the target for a right-handed shooter and in the low right area of the target for the left-handed shooter. An accomplished shooter will focus on the sighting system, allowing their natural wobble area to move across their aiming point while steadily pressing their trigger flat and straight back. All of their shots will hit the target within their wobble area, leaving a small rounded group.

I have had handgun shooters tell me that they do not like red dot sights because they say the dot moves around too much in the sight. I explain that the dot does not move within the sight; they just see their natural wobble area intensified on the target. Standard front sights when aligned correctly with the rear sight (sight alignment) on handguns cover more of the target at any given distance than a two or three mil-dot sight, so you do not notice the natural wobble area as much with standard sights. You will have the same size wobble area with standard sights as you will with a mil-dot sight. The difference between the standard sights and a mil-dot sight is that you will see a small, vivid red dot dancing around on your target instead of thick standard sights covering more of the target.

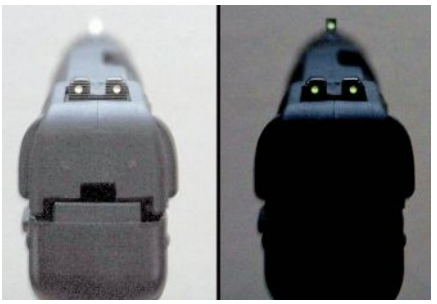
OFFERING A SOLUTION

To shoot and hit within your natural wobble area, you must focus your eyes directly on the front sight while looking through the rear sight or mil-dot while smoothly and continuously pressing the trigger flat and straight back until the handgun fires. Never force the shot. Your wobble area will get smaller with proper training and practice. When practicing, try to remember: The wobble area will always be there. Just take a couple of deep breaths, relax and do not shoot more than two shots. After firing two shots, bring the handgun down, trigger finger off the trigger, muzzle pointing at the ground in front of you, maintaining your shooting grip, **do not look at the target**, take a couple of deep breaths, and shoot two more shots. Repeat this drill for ten shots.

Four of the seven fundamentals of marksmanship must be understood and practiced frequently by the shooter to reduce the size of their natural wobble area. They are:

Grip – The shooting hand must grip as high as the backstrap will permit, shooting hand thumb held up, trigger finger straight alongside the slide, lower three fingers wrapped firmly around the magazine well, support hand wrapped around shooting hand, thumb held up. To aid in controlling the handgun's recoil, thus controlling the handgun, you must apply maximum pressure with both hands when firing the handgun.

Sight alignment – Sight alignment on a firearm equipped with a rear sight and a front sight is a matter of properly aligning the front sight with the rear sight as you look through the rear sight aperture. To acquire and maintain sight alignment, the shooter must look directly at the front sight through the rear sight. The front sight **must** be the focal point, with the rear sight slightly out of focus and the target a complete blur. To sustain proper sight alignment, the shooter must **stare** at the front sight through the rear sight aperture throughout the trigger press. Scopes and dot sights do not require any positioning within its self.



To keep the sight properly aligned, the shooter needs to focus on the front sight through the rear sight aperture during the entire trigger press.

Sight picture – Sight picture is basically positioning the appropriate sight alignment, red dot, green dot system, or scope crosshairs directly on the desired aiming point on the target and hold it still. Everyone has a natural wobble area, some bigger than others, but no one can hold their firearm perfectly still while aiming. I have had students tell me their sights were centered on their aiming point and I am sure they were until the student jerked the trigger, moving the muzzle either low left or low right. That brings us to lack of proper trigger control.

Trigger control – Trigger control is more of a psychological dilemma than a physical one. The shooter must have command of their emotions before they can effectively control physical movement. Trigger control is broken down into two phases; the independent action of the trigger finger steadily pressing the trigger straight to the rear and follow through. Follow-through is the act or manner of continuing the rearward pressure on the trigger through the recoil cycle. Trigger reset (reengaging the sear) is a part of follow-through. When the recoil cycle has ended, the shooter deliberately allows the trigger to move forward just enough to reset the sear, usually an audible click. The trigger finger must maintain contact with the trigger from beginning to end of the firing and recovery sequence.

WHAT TRULY COUNTS

In order to take command of the four listed shooter errors, novice shooters must be willing to practice patience, proper attitude, time, dry firing, and enlist the help of a coach. To develop the skills necessary to master trigger control, perfect practice must be continual. Precise dry firing practice, with the aid of a qualified coach, will help develop the skills necessary for the student to control the trigger throughout the firing sequence. With proper trigger control, you will be able to hit within your natural wobble area, forming a rounded group. The application of time, patience, attitude, and perfect practice will unquestionably reduce your natural wobble area. P&SN

With the help of a qualified coach, problem shooters have a better chance to overcome the problems which prevent them from shooting accurately.

Larry J. Nichols retired in 2011 after 27 years of honorable service as the Senior Rangemaster/Armorer for the Burbank (CA) Police Department. He served five years with the Orange County (CA) Sheriff's Department as their Firearms Instructor/Armorer before moving to Burbank, California.

Larry has over 40 years of experience as a professional firearms instructor, with over 31 years as a law enforcement lethal, less lethal and less than lethal force instructor. He is internationally noted for his innovative and pioneering work in the planning, development and implementation of realistic law enforcement firearms training programs.

2024 Innovations in BODY ARMOR AND BALLISTIC MATERIALS

JAKE GANOR

What are the latest developments and advancements in technologies designed to improve ballistic protection?

The past year has been a big one for the body armor industry. It has seen the release of a new polyethylene fiber for armor applications – which is momentous, as UHMWPE (Ultrahigh Molecular Weight Polyethylene) composites are now the most important material in body armor development – and the National Institute for Justice's 0101.07 specification for body armor has been formally launched. The impact of these developments will be felt over the coming years and they are well worth a brief review.

Advances in Polyethylene Armor Materials

Over the past 15 years, UHMWPE fiber composites have gradually come to dominate the body armor industry. Today's best performing soft armor systems all utilize polyethylene-based materials such as Dyneema® or Spectra-Shield®. In hard armor, the best ceramic plates incorporate a thick layer of these composite materials behind their ceramic strike faces and, in some cases, UHMWPE is used on its own. And, in helmets, the Integrated Head Protection System (IHPS), the Enhanced Combat Helmet (ECH) and the high-end Ops-Core FAST RF1 all have shells made entirely or primarily of UHMWPE. Even the Army's new Combat Vehicle Crewman (CVC) Gen 2 helmet is also made primarily of UHMWPE.

Before proceeding further, I should clarify that UHMWPE for armor applications is very different from the common forms of polyethylene in milk jugs and UHMWPE in wear liners. Armor-grade UHMWPE is always a composite. It's made of very thin UHMWPE fibers stretched taut and held fast in a resin matrix, usually polyurea or a polystyrene derivative. The ratio of fiber to resin is typically around 9:1. The fibers, being extremely thin and highly aligned, are largely free of defects, so their tensile strength approaches the strength of their atomic bonds. Thus, the difference between a UHMWPE fiber composite and a UHMWPE wear liner is analogous to the difference between a plate of fiberglass and a pane of glass: They're the same material, but one is orders of magnitude tougher and more damage resistant than the other and for just the same reason.

As UHMWPE has become so ubiquitous, advances in fiber development have had a tremendous impact on the development of body armor, though progress has been slow. Initially, the only fibers available for armor were Dyneema SK76, Spectra 1000 and similar grades. For roughly 20 years, all UHMWPE fiber composites were made with these fibers.

In 2013, DSM released the Dyneema SK99 fiber – markedly stronger and more crystalline than SK76 – and this was utilized in their high-end composite laminates for soft and hard armor: HB210, HB212, SB115, and SB117. All of these were marketed with "Dyneema Force Multiplier" branding to denote their substantially improved performance over prior grades.

Early all-Dyneema hard armor plates – generally built from an SK76 grade like HB50 to Level III – cluster around 3.3 pounds at 10" X 12". Level III plates made with "Force Multiplier" HB212 tend to weigh around 2.2 to 2.5 pounds at the same size. Some of this weight reduction is due to advances in processing techniques, but the far larger share is due to the improved properties of the SK99 fiber.

Proportionately similar gains have also been seen in soft armor, ceramic armor plates and helmets.

Now, at last, the Dyneema line is set to evolve past SK99, with a variety of new products based on an entirely new type of fiber. This fiber, which does not yet have an official name, has superior properties compared to SK99 and promises improved performance in armor systems. It's more crystalline, more highly aligned, contains fewer defects and – most importantly – it's stronger, with an improved strength-to-weight ratio.

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Continued from page 26

With recent advances, it's entirely possible that Level III/RF1 plates will be produced weighing under two pounds and complete helmet systems might also be developed to weigh less than two pounds, as well.

SB301 utilizes this new fiber and is a harbinger of things to come: Soft armor made with SB301 is significantly thinner, lighter and more flexible than armor made with any older grade of Dyneema.

Forthcoming new grades of Dyneema for hard armor and helmets will enable similar performance gains. The magnitude of these gains has yet to be seen, but it's possible that Level III/RF1 plates will be made at well under two pounds and complete helmet systems might also come to weigh less than two pounds.

New NIJ Specifications for Body Armor and Ballistic Threats

The National Institute of Justice (NIJ) has recently unveiled the 0101.07 standard, a highly anticipated update to the guidelines for testing and certifying body armor. This revision aims to address inconsistencies and gaps in the old 0101.06 specification. The major changes can be briefly summarized:

Handgun threats: Levels I and IIA are removed from the specification. The new level HG1 (Handgun-1) corresponds to the .06 specification's Level II and HG2 corresponds to the .06 spec's IIIA.

Rifle threats: Plates built to RF1 are to be tested against 7.62x51mm M80 Ball, 7.62x39mm MSC (Type 56 from Factory 31) and 5.56x45mm M193 bullets. RF2 plates are tested against 5.56x45mm M855 steel penetrators in addition to all RF1 threats. At RF1 and RF2, all plates are tested against three shots per threat, rather than the six shots that the 0101.06 specification called for at Level III. RF3 plates are tested against one shot of .30-06 M2 armor-piercing bullets, so it represents a continuation of the .06 spec's Level IV.

So, there are no more obsolete handgun levels and all rifle threat levels are "III+" – with RF2 truly representing the full spectrum of rifle ball threats.

A major enhancement in the NIJ 0101.07 standard is the approach to testing the 7.62x39mm Mild Steel Core (MSC) bullet, infamous for its significant manufacturing variability. Previously, in special threat testing, this variability led to inconsistent test results which undermined the reliability of armor performance assessments and made it difficult for armor designers to build "to spec" without overengineering. The updated standard now specifies the use of the 7.62x39mm Type 56 bullet from Factory 31, selected for its uniformity, as an interim measure for standardized testing until a surrogate round can be developed.

The introduction of the derivative NIJ Standard 0123.00 is another significant change, serving as a centralized repository for all ballistic threats. This new standard aims to harmonize threat definitions and testing protocols across different types of armor, for consistency and reliability in performance evaluations.

In smaller changes, the 0101.07 standard updates shot location protocols, particularly for the crown of hard armor plates, and includes specific testing criteria for female structured soft armor panels.

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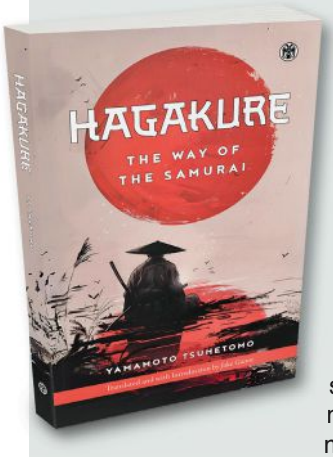
New Book Explores the Samurai Way

The Nobility of Spirit in the Warrior Class Endures in Jake Ganor's Translation of *Hagakure: The Way of the Samurai.*



Following in the tradition of Bushido, or samurai code of philosophies and teachings, such as the *Code of the Samurai* and the classic *The Art of War,* the latest addition, *Hagakure: The Way of the Samurai,* translated by Jake Ganor, takes its rightful place among the revered philosophies of the Samurai life.

The Hagakure originated as a series of oral teachings by a former samurai, Yamamoto Tsunetomo, who became a Buddhist monk taking the temple name Jōchō upon the death of his lord, Lord Mitsushige Nabeshima, the head of Saga's ruling family. Tsuramoto Tashiro, a Nabeshima clan samurai, took Jōchō's oral philosophies and compiled them into multiple books between 1710 and 1716.

Hagakura, meaning "Hidden Leaves," is a practical philosophy for the daily life of a samurai; ethical jewels found among the poetry. Jōchō intended these teachings to never see the light of day and, indeed, had not been made public outside the Saga Prefecture in Japan until the late 19th century.

Ganor's considerate translation removes early archaic tones imposed by previous English translations and gives the readings a contemporary tone. The work implores being read out loud, much as it was originally intended; an oral teaching from a master to student on how to live the ethical life of a samurai – self-disciplined, honorable and loyal to authority.

Fresh and relevant, it is a must-read for all students of Bushido and the samurai warrior ethos. The book is available at Imperium Press at **https://tinyurl.com/yc8epew9** or on Amazon at **https://tinyurl.com/2wkfaafd**

NIJ-accredited labs have recently begun testing armor plates to the new 0101.07 spec and a new Compliant Product List is anticipated for 2025.

Research Trends

The war in Ukraine has highlighted the critical importance of fragmentation protection for infantry. Interestingly, military fragmentation armor, including much of what's presently issued by NATO militaries in Europe, is often made to adhere to the NIJ specifications for soft body armor, Level II (HG1) or IIIA (HG2). Yet, as briefly noted previously, these specifications assess armor panels against large caliber soft tipped or hollow point handgun rounds – they were not intended to address 17-grain tool steel fragments at much higher velocities. The 17-grain steel fragment is almost the exact opposite of the 240-grain SHJP .44 Magnum bullet – and armor which is optimized against the one won't necessarily fare well against the other.

Several ongoing research projects are aiming at optimizing soft armor performance against the fragmentation threat, outside of the NIJ framework. One such project has developed a soft armor package weighing 0.44 pounds per square foot which achieves a V50 (50% probability of stopping the threat) against the 17-grain FSP at nearly 1700 feet per second. This represents a tremendous increase in performance efficiency in comparison with the Army's current frag armor systems which weigh 0.88 pounds per square foot (+100%) and have a V50 of 1850 feet per second (+8.9%).

Frag armor modernization is right on the horizon. The light weight and flexibility of modern frag armor systems will enable improved coverage for men in the trenches. The same systems may also prove useful for extremely lightweight and flexible extremity armor for entry teams – in shoulder, arm, thigh, hip, and groin armor panels. P&SN

Jake Ganor is a materials scientist, armor engineer and a designer of ballistic shields. His company, Adept Armor (ade.pt), is pioneering next generation armor systems. His book, Body Armor and Light Ballistic Armor Materials and Systems *is available on Amazon.*

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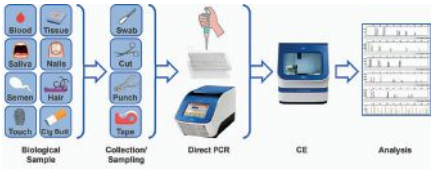
Improving Analysis of

Researchers try a new way to maximize DNA in low yield situations and reduce costs.

Sometimes, forensic labs can find ample DNA in the evidence collected at a crime scene. Other times, investigators are not as fortunate. Evidence samples with low amounts of DNA may not yield a profile which investigators can use to match or exclude potential suspects.

Researchers have a potential solution: direct Polymerase Chain Reaction (PCR). This DNA amplification method allows scientists to add a swab or sample directly to the PCR which eliminates the loss of DNA which traditionally occurs during DNA extraction and quantification.



The direct PCR process: types of samples, collection and sampling methods, direct PCR in the thermocycler (for DNA amplification), Capillary Electrophoresis (CE) for DNA profiling, and analysis results

Laboratories in the United States already use direct PCR for reference samples where the DNA donor is known, but current federal quality assurance standards keep them from using direct PCR for forensic evidence. The federal standards require all unknown forensic samples to undergo DNA quantification prior to amplification.

In 2016, the Organization of Scientific Area Committee for Forensic Science was formed to address the lack of discipline-specific forensic science standards. It called for an assessment of the standard which recommends extraction and quantification during DNA processing of all evidence types, even those with low DNA yields. Soon after, the NIJ's Forensic Science Research and Development Technology Working Group identified a need for enhanced DNA evidence collection techniques which maximize DNA recovery. This group also identified a need for comprehensive studies which provide practical data about DNA transfer and persistence or, more simply, how DNA evidence gets on items and how long it tends to remain there.

Direct PCR Outperformed Standard PCR for Many Trace DNA Items

NIJ-funded researchers, led by Jonathan Davoren of Bode Technology, sought to reassess the current FBI guidelines for processing unknown forensic samples. They also assessed the operational requirements needed to maximize DNA recovery using direct PCR which produced practical data about trace DNA evidence collection and analysis.

Davoren's team sought to better understand:

- How different types of materials work with the direct PCR process by comparing evidence collection results from a variety of items using direct PCR and standard PCR.

- How well direct PCR works (a) after items have been stored for various periods of time and (b) when items are resampled after their initial analysis, by examining the quality of the DNA profiles produced.

First, researchers collected DNA from 11 items and processed them using the standard PCR (extraction, quantification and amplification) and direct PCR methods (no extraction or quantification). The researchers then assessed the quality of the DNA profile based on whether the profile met the criteria to be uploaded into the Combined DNA Index System (CODIS) (the CODIS eligibility success rate).

The direct PCR method produced higher quality DNA samples than standard PCR for trace DNA found on certain items, such as plastic slides, polyester, metal tools, handgun grips, wood handles, and foam cups. However, the direct PCR method produced lower quality DNA samples than the standard PCR method for other items, including vinyl shutters, denim, 100% wool, concrete bricks, and cartridge casings.

To examine the effects of time and storage on the collection of trace DNA using direct and standard PCR, they conducted a time study on items that had been stored for three and six months. The direct PCR results did not differ significantly from those produced when items were processed immediately after collection,

"Trace DNA" Evidence

and they were comparable to, or better than, standard PCR for all items and time points, excluding 100% wool at six months, and concrete bricks and cartridge casings at all time points.

Finally, the group studied the effects of resampling items by reprocessing samples using the same method with which they had been previously processed (either direct or standard PCR). In general, the resampling was unsuccessful. The wood tool handle was the only item with which direct PCR was somewhat successful which suggests that the texture of unfinished wood may help retain DNA. Resampling was less successful on samples processed with direct PCR compared to those processed with standard PCR for plastic slides and cartridge casings at zero months; 100% wool at six months; and concrete bricks at all time points.

Caution Regarding Contamination and Re-analysis

The researchers cautioned that the sensitivity of direct PCR processing resulted in a small amount of contamination with foreign DNA (six percent of samples) which they attributed to both known sources, introduced prior to and during lab processing, and unknown sources. Moreover, the direct PCR process consumes the portion of the sample used. This means that there is no DNA extract created and no sample remaining for reanalysis unless it is purposely set aside.

Informing Federal Guidelines and Practice

The direct PCR method for trace DNA processing can produce complete DNA profiles in less than three hours and save labs approximately three to four hours of hands-on time and 25% in reagent costs. Although the process was not effective across all types of items, it was an improvement over standard DNA processing of trace DNA for seven of the 11 items tested.

The results of this research inform the reevaluation of federal guidelines and could simplify sample collection and submission guidelines for forensic laboratories. If a revision of federal guidelines includes direct PCR for forensic analyses, these results suggest that investigators should ensure that enough of the original sample remains for retesting and limit the types of items analyzed to those shown to produce high quality DNA using direct PCR.

About this Article

The work described in this article was supported by NIJ grant number 2019-DU-BX-0009, awarded to Bode Cellmark Forensics, Inc. This article is based on the grantee report, "Improving Results from Touch DNA Evidence with Optimized Direct PCR Methods," by Jonathan M. Davoren, Abigail S. Bathrick, and Anna C. Salmonsen.

A full copy of the report (PDF, 27 pages) can be downloaded at **https://tinyurl.com/ycy4ey3z** P&SN

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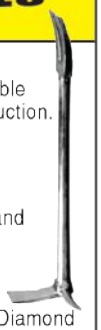

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UNLEASHING PANDORA'S BOX: The Threat of AI-driven Cybercrime

CARL MAZZANTI

Cybercriminals are getting smarter and their use of Artificial Intelligence (AI) is making their tactics more sophisticated and complex.

Image courtesy of Easy-Peasy.AI

Bad actors are leveraging AI technologies to develop innovative tactics, techniques and procedures which pose significant challenges for cybersecurity professionals and organizations worldwide. However, law enforcement and other security organizations can create the opportunity to work together with cybersecurity professionals to stop attacks. This collaboration can help reduce the impact of attacks on operations and data security.

Cybercriminals often use AI for social engineering and phishing attacks. Chatbots and conversational agents – powered by AI – can imitate human interaction very accurately, enabling cybercriminals to engage in convincing conversations with potential victims. During these interactions, they can gather sensitive information, such as login credentials and personal data.

Attackers are also increasingly targeting law enforcement agencies which can put the general public at risk. Earlier this year, for example, a hacker used an E-mail message – which appeared to come from the Miami Dade State Attorney's Office (SAO) – as a way to get multiple North Miami Beach Police Department employees to open what appeared to be a legitimate document from members of the SAO staff. The SAO itself released a statement calling the hack a "very sophisticated" phishing intrusion.

AI-driven malware represents another significant threat to sensitive data. Machine learning algorithms can adapt to security measures, making it hard for antivirus software and intrusion detection systems to detect malware. AI algorithms can also analyze stolen data to find valuable targets, such as high net worth individuals or organizations with weak security.

Such old-fashioned security methods such as looking for signatures and following rules are no longer effective against advanced AI threats which can change and grow rapidly. Consequently, your response to these and other threats should leverage such layered

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GunSafe® Program

The Eddie Eagle GunSafe® program is the NRA's gun accident prevention program that seeks to help parents, law enforcement, community groups and educators navigate a topic paramount to our children's safety. Eddie and his Wing Team are on a mission to help you teach Pre-K through 4th graders what to do if they ever come across a gun...

STOP! DON'T TOUCH! RUN AWAY! TELL A GROWN-UP!

Eddie's fun and free material, available at **eddieeagle.nra.org**, makes it easy to understand and remember his safety advice with a catchy song and a scenario in which Eddie and his friends—the WingTeam—encounter just such a situation and help each other (with the help of trusted grown-ups) learn how to stay safe. The Eddie Eagle Tree House website at **eddieeagle.com** lets children explore these safety concepts more fully, but in a fun way, with lessons, coloring pages, storybooks, etc...

A Parents' Guide To Gun Safety
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Toy Guns Vs. Real Guns
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2. ALWAYS keep your finger off the trigger until ready to shoot.
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Eddie Eagle GunSafe® Program
If you see a gun ...
STOP
DON'T TOUCH
RUN AWAY
TELL A GROWN-UP
Pre-K and Kindergart
3rd Grade and 4th Grade

Another important way Eddie spreads his message is through the mascot costume. These costumes are now available to law enforcement, fire departments, EMS and school administration agencies through an NRA Foundation State Fund grant.

For more information, please visit https://eddieeagle.nra.org

Continued from page 34

operational defenses as Multifactor Authentication (MFA) where users must provide additional identity verification – like entering a code received via phone or other device – before they can gain access to an account or an app. A layered defense will also include solutions like comprehensive file backup with cloud-based or other offsite storage, a well-developed and updated incident response plan, strong password policies, good user cyber hygiene, and security awareness.

Additional defenses, like Security Incident Event Monitoring (SIEM), and a 24 x 7 x 365 Security Operations Center (SOC) are also critical components. The SIEM component is a cybersecurity layer which collects and tracks information or data and can alert your organization that cybercriminals are probing your perimeter, while a well designed, scalable SOC service will integrate real-time automated monitoring with 24 x 7 x 365 human expert analysis of critical infrastructure device logs. SOC response teams use best practices in the industry to protect against ransomware and other threats.

The SOC teams proactively work to prevent threats by taking action to mitigate and remediate them, either remotely or onsite. These cybersecurity teams also offer managed detection and response services to ensure the security of your organization.

Remember to also back up your data regularly. Set up automatic downloads for patches or software updates. This will ensure that updates are installed on time. As an additional measure, law enforcement and other security agencies should restrict access to their Web sites using geo-blocking. This will prevent hackers from certain high-risk countries from accessing their systems.

Consider the Human Angle

Security awareness training can further reduce risky employee IT behavior which may lead to security compromises. One effective security method is penetration testing, whereby a skilled tester uses hacker methods to identify system weaknesses.

Sensitive data held by law enforcement and security agencies is becoming more important. This has caused an increase in ransomware and other dangerous threats. When your agency works with an experienced cybersecurity partner to embrace appropriate learning and other resources, you will be less attractive to hackers and will reduce your chance of being victimized by digital criminals. **P&SN**

*Carl Mazzanti is President of eMazzanti Technologies (**emazzanti.net**) in Hoboken, NJ, providing IT consulting services for businesses ranging from home offices to multinational corporations, municipalities and police departments.*

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BUSTED!

JAMES L. MCCLINTON, PH.D.

Time to call the "vise squad"… The Royal Canadian Mounted Police in Saskatchewan noticed a man driving erratically so they pulled him over. When the Mounties approached the man behind the wheel, they were shocked to discover that he wasn't actually behind the wheel at all. How can that be? It turns out that the car had no steering wheel. Instead, the Mounties discovered that the vehicle had only a steering column with a couple of vise grips attached to it. The driver can be commended for his creativity. But, alas, the mechanized moron wasn't quite so creative when it came to his driver's license – in fact, he didn't have one. The driver was busted and ordered to have the vehicle inspected for safety. (*I wonder if he also used a doorbell in place of the ignition switch?*)

That's a hard act to swallow… A 38-year-old convict in a Karnataka, India, prison moved swiftly to hide the cell phone he smuggled in when guards raided his cell. But, instead of stashing the contraband in a pillowcase or toilet, the convicted murderer swallowed the phone. When he started complaining of stomach pain, he was transferred to Victoria Hospital in Bengaluru where doctors did an ultrasound. A few days later, he went under the knife to remove the phone which was stuck at the entrance of the small intestine. The phone had been inside the man for 20 days when it was removed; the prisoner recovered from the surgery and was returned to his cell. (*I threw my phone off the roof and it broke. The airplane mode must've been switched off.*)

Justice = Just Us… The Monroe County (New York) District Attorney explained she saw a Webster Police car behind her with his emergency lights turned on. Once she realized the officer wanted to pull her over, she says she called the Webster Police Chief to tell him she would speak to an officer at her house. The officer spoke with her at the home and issued her a ticket for going 55 mph in a 35 mph zone. She said, "Sorry, I'm the DA, I was going 55 coming home from work." The officer replied, "55 in a 35." The DA responded, "I don't really care." She then told the officer she did not hear his siren, having been talking on a hands-free phone, and didn't pull over because "she didn't feel like stopping." She told the officer to go ahead and write a ticket "because I'm the one that's going to prosecute myself." The next day, she pleaded guilty and sent the ticket to Webster Town Court. (*She sets a bad example for other speeders.*)

Big wheels keep on rollin'… Investigators recently caught their targets in a puzzling moneymaking scheme in Rochelle Park, New Jersey. A police detective and his partner arrested two men, aged 77 and 54, whom they dubbed the "Shopping Cart Bandits." The two had stolen at least 140 carts from the ShopRite grocery which police believe they were selling for about $200 wholesale. "It was about $28,000 worth of shopping carts," he said. The Food Marketing Institute estimates that two million shopping carts are stolen each year. The two men are now on a roll at the Bergen County Jail. (*Other than the homeless, who would want to buy one?*)

Catching Bigfoot was no small "feet"… An elementary school in Henrietta Township, Ohio, was locked down after a Sasquatch was spotted running past classroom windows. The school superintendent said a person in a Bigfoot costume parked in one of the district's lots, "crossed our campus and caused the district to enter into a lockdown." Kids outside on recess were quickly moved indoors. Bigfoot never made it inside any of the buildings; the Lorain County Sheriff's Office revealed the person in the costume was a parent pulling a prank. The parent was pulled over in a traffic stop, but no charges have been filed yet. (*Many people think that the Abominable Snowman doesn't exist, Yeti does.*)

It was tough staying awake during his sermons… Police say a Connecticut pastor has been arrested on allegations that he sold crystal meth out of his church's rectory. The pastor of a United Methodist Church in Woodbury was taken into custody after police received a tip about the drugs. He was charged with possession of narcotics with intent to sell, possession of a controlled substance and use of drug paraphernalia, among other charges. Police said they arrested the pastor at the site of a purported drug deal set up by a cooperating witness who had tipped them off. (*Keeping the "meth" in Methodist*)

A friend with weed is a friend indeed… Drug dealers normally don't care to interact with police officers, but a 33-year-old man in Largo, Florida – where it is illegal to possess marijuana with intent to sell – actually called for police assistance. When officers arrived, the man "stated he was selling marijuana and someone stole $10 from him while (he was) attempting to sell it." The police officers reportedly were inclined to believe the man's story because he was holding 11 baggies of marijuana, totaling 40 grams. The caller, who has been convicted of marijuana, cocaine and battery counts in the last year, was charged with two drug felonies and booked into the county jail. The thief who stole his $10 apparently remains at large. (*He angrily told the officers, "I'll see you all inhale!"*) P&SN

Taking rush delivery to a whole new level…

Recently released video of a traffic stop along Route 20 west of Fremont, Ohio, showed body cam footage from a Sandusky County deputy. He had just pulled over a USPS mail van for speeding, going more than 100 mph in a 60 mph zone. "Is there a reason you're going over 100?" video showed the deputy asking the 28-year-old female driver, to which the driver replied, "I didn't realize I was going that fast." The official report stated that the driver appeared to be racing a Ford Mustang®. The postal worker identified herself as being from the Fremont Post Office. She waived the case which is now closed. A spokesperson for the USPS said the incident is being investigated. (*One might say she went postal with that van.*)

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